REPORT

OF THE

SELECT COMMITTEE

ON THE

HOLYHEAD AND LIVERPOOL ROADS.

Ordered, by The House of Commons, *to be Printed,*
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REPORT.

THE SELECT COMMITTEE appointed to inquire into the Amount of all sums of Money received, expended and repaid by the Commissioners for the Improvement of the *Holyhead* and *Liverpool Roads*, distinguishing the Sums applied to the several Districts of these Roads; into the Amount of each Contract, the Amount paid, and to whom paid; into all Salaries, Travelling Charges and other Allowances paid under the direction of the Commissioners; and into the additional Tolls levied for the repayment of Loans.—Also to inquire into the Progress made in carrying into execution the recommendations of former Committees appointed for the purpose of inquiring into the means of improving the Communication between London and Dublin, and between the Northern Parts of England and Dublin; and who were empowered to report their Observations thereupon, and upon what further Improvements may be made, together with the MINUTES OF THE EVIDENCE taken before them, from time to time, to The House;——HAVE considered the Matters to them referred, and have agreed to the following REPORT:

THE Committee have proceeded in making the inquiries referred to them, and find from the Accounts which have been laid before them, that the Commissioners appointed by the Act of the 55th Geo. III, c. 152, for the Improvement of the Holyhead Road, have received the sum of £. 759,718. 6*s.* 11*d.*; that of this sum, £. 338,518. 14*s.* 1*d.* has been granted by Parliament, without any condition for repayment, for Works in North Wales; that £. 394,114. 6*s.* 6*d.* has been granted by Parliament, or advanced by the Exchequer Bill Loan Commissioners by way of Loan towards the building of the Menai and Conway Bridges, the making of the new Road across the Island of Anglesey, and the improvement of the Road between London and Shrewsbury; and that repayments have been made to the amount of £. 103,633. 2*s.* 2*d.* The details of the expenditure of the sum received by the Commissioners, of £. 759,710. 6*s.* 11*d.*, are stated in an Account in the Appendix. See Appendix, No. 1.

In order to ascertain in what manner the Commissioners have applied the money entrusted to them, the Committee examined their engineer, Mr. Telford, who produced the Statement which is here inserted, containing a short description of each Work that has been executed by the Commissioners since they were appointed to superintend the Improvement of the Holyhead Road in the year 1815, under the following heads:—

1. Roads made in North Wales on the London and Holyhead Mail Line.
2. Roads made in North Wales on the Chester and Holyhead Mail Line.
3. Embankments at the Stanley Sands and at Conway.
4. Bridges over the Menai Strait and over the river Conway.
5. Roads made between London and North Wales on the London and Holyhead Mail Line.

6. The

6. The Harbours of Holyhead and Howth.

7. The Road from Howth to Dublin.

8. The widening and deepening the Channel through the Swilly Rocks in the Menai Straits.

STATEMENT of the WORKS performed between the Years 1815 and 1830.

HOLYHEAD ROAD.—NORTH WALES.

Holyhead to Chirk.

BETWEEN Holyhead Pier and Chirk Bridge is a distance of 83 miles 1,320 yards. The whole may be fairly considered a new Road, as the short pieces of the old Road retained were entirely re-made. The whole of the roadway is constructed with a substantial rubble stone pavement, carefully hand set, and covered with a six-inch coating of properly broken stone. There are in all cases where found necessary breast and retaining walls of stone, with numerous side and cross drains, all constructed in the most perfect manner. The whole is protected with stone walls; those upon precipices built with lime-mortar, most of the others pointed with it. There are several considerable bridges, also numerous cuttings and embankments in that mountainous country; one particularly at the village of Chirk is 50 feet in height. Four miles of branch Roads have been made. The tollhouses and gates are on a new construction, as are the milestones, and sufficient recessed depôts for stones have been made in every part of the Road. An entirely new inn has been built in the middle of the Island of Anglesey, upon the new line of Road.

CHESTER LINE.

Tally Pont Hill.

FROM Tally Pont Bridge a new Road has been made upon comparatively level ground, to avoid the inconveniently steep inclination of Tally Pont Hill, and to save distance, 1 mile 132 yards. This Road is made with a pavement bottom, and a covering of hard field pebbles, properly broken.

Pen Man Mawr.

This improvement consists chiefly of rock cutting, in some parts 30 feet in height, with high breast and retaining walls, stone parapets laid in lime-mortar; the roadway is formed of pavement bottoming and a coating of broken stone; so that this formerly frightful precipice is now safe trotting Road.—Distance improved, 1 mile 231 yards.

Pen Man Back.

Between Pen Man Mawr and the town of Conway, excepting a short distance, a new Road has been made to avoid Sychnant Hill, over which the mail road formerly passed, by dangerous inclinations, to upwards of 540 feet above the level of the sea. The new Road is comparatively level, having no inclination more than one in twenty-five, and that only for a short distance of about 100 yards; the rock cutting required in some instances, in the face of a precipice, 100 feet in height. The roadway is in all respects similar to that at Pen Man Mawr, as to breast and retaining walls, parapets, &c.—Distance improved, 4 miles 1,408 yards.

Rhyalt Hill.

Up a valley between St. Asaph and Holywell, a Road has been made to ease the steep and long-continued ascent of Rhyalt Hill, which, in some cases, was one in seven. The new roadway is made with bottom paving and broken limestone, with very good side and cross drains.—2 miles 1,166 yards.

EMBANKMENTS IN NORTH WALES.

Stanley Sands.

NEAR Holyhead there is an inlet of the sea, known by the name of the Stanley Sands: over this estuary an embankment 1,144 yards in length has been made; the height above the undisturbed surface of the sands in the middle is above 29 feet; the breadth at the top, including the parapet walls and outer facing, is 34 feet; the slopes on each side are at the rate of three to one, and these slopes are faced with rubble stone, two feet in thickness; on each side of the Road there is a parapet four feet in height, coped with cut stone. The roadway is 24 feet in width; it has a paved bottom and a coating of broken stone. In order to admit the tide to flow into the space on the west side of the embankment, there is a bridge built upon the only piece of natural rock found in that part of the estuary. This work was executed in two years; 156,271 cubic yards of earth, and 25,754 cubic yards of rubble stone, were deposited in forming it: it has been completed seven years, and is now in a perfect state.

Conway Embankment.

The eastern approach to Conway Bridge is formed by an embankment upon the sands, over which the tide usually flowed and rendered it a very difficult and dangerous passage. The distance from the eastern shore to the Island is 672 yards; the height of the embankment, on account of the sand being swept away by the violence of the tides during the execution of the work, is 54 feet; its breadth at the base is 300 feet, and 30 feet at the roadway: the side slopes are faced with rubble stone.—261,381 cubic yards of earth, and 51,066 cubic yards of rubble stone, were employed in forming it. The whole has been finished three years, and is now in a perfect state.

BRIDGES IN NORTH WALES.

BESIDES several stone bridges, three of a novel description were required:

Menai Bridge.

Over the Menai Strait, which separates the Island of Anglesey from Carnarvonshire, in order to supersede an inconvenient ferry, it was found, after many years investigation and discussion, that, in a navigable and rapid tideway, a bridge upon the principle of suspension was the most practicable and economical; a bridge of that description therefore was begun in 1818, and successfully completed and opened on the 30th January 1826. This structure being of very unprecedented novelty and magnitude, considerable apprehensions were entertained concerning its stability; the engineer, therefore, by the advice of his friend the President of the Royal Society (one of the Commissioners), considerably increased the height of the piers and the dimensions of the masonry and ironwork beyond the original design, and this unavoidably led to corresponding increase of expense; but as all the works were paid for at the prices previously fixed in making the first estimate, and as the quantities have been ascertained by measurements and weights correctly made by the resident engineer, the public has only paid for what was actually found in the work, and the edifice is thereby rendered more substantial.

The contractor for the iron works having made a claim on the Commissioners for alleged loss sustained by him in consequence of the unprecedented rise in the price of iron, the Commissioners felt themselves justified, on inquiry, in representing to the Treasury that the difference between the price paid by him for 2,000 tons of iron, employed on this and the Conway Bridges, and the price at which the contract had been made, exceeded 4,500*l.*; but this claim was not admitted.

The distance between the points of suspension, for the middle opening, is 580 feet, and between the pyramids and toll-houses about half as much, to which is to be added what passes down the galleries to the places of fixture in the rocks, making the whole length of each main chain 1,750 feet, or one third of a mile.

The height from low water to the top of the saddles on the pyramids is 181 feet; and between the saddles and the roadway, 60 feet.

The breadth of the platform is 30 feet, and consists of two driving-ways and a footpath between them.

There are four stone arches on the Anglesey side, and three on the Carnarvonshire side, each 52 feet 6 inches span.

This bridge has been in constant use four years, has required no repair but painting, and is now in a perfect state.

Conway Bridge.

At the town of Conway, between the before-mentioned island and the rocks in front of the old castle, there is a space through which the tide flows with very considerable velocity; over this space there has been made a bridge on the same principle as the Menai, it is 327 feet between the points of suspension; in this there is only a single roadway. The main chains are fixed in rocks at each extremity; the western approach is by a gateway formed in the old town wall, and by an embrazured terrace around the basement of one of the towers; the masonry of the supporting pyramids, and also the toll-house, is made to correspond with the old castle.

Waterloo Bridge.

Where the Shrewsbury Road crosses the Conway River above Llanrwst, it was necessary to build a new bridge of one arch, 105 feet span; and building stone of proper dimensions and quality not being to be had at any moderate expense, this bridge is built of cast iron. The main ribs consist of the following words in roman capitals—THIS BRIDGE WAS CONSTRUCTED IN THE SAME YEAR THE BATTLE OF WATERLOO WAS FOUGHT; and having the national emblems, the rose, thistle and shamrock, in the angles, it becomes a public and lasting testimonial of the action which so splendidly terminated the war.

THE ROAD BETWEEN LONDON AND NORTH WALES.

Highgate Archway Road.

This Road being upon a clay soil with springs of water, originally very imperfectly made, never properly repaired, and at last totally neglected, it became absolutely necessary to thoroughly re-make the whole upon proper principles.

The roadway bottom was therefore completely opened, and numerous side and cross drains constructed, so as to carry off the water. Next, in order effectually to prevent the water, or even the damp from the clay, affecting the roadway, a bed of concrete, composed of Parker's cement and washed gravel, six inches in thickness, was laid over it, which at the same time formed a substantial bottoming for the road metalling; upon the bed thus prepared, there has been laid a coating of properly broken Guernsey granite.

There has been a regular footpath formed along each side of the Road; the slopes of the deep cutting on each side of the Archway, which were cracking and slipping down, have been dressed and sown with grass seeds, the whole remaining now in a perfect state after a trying winter, is an instance that even a seemingly desperate case may, by proper exertions and skill, be effectually remedied: and also proves of what importance it is to have a road very perfectly made at first.—Distance improved, 1 mile 892 yards.

Barnet and South Mims Road.

Between the town of Barnet and the village of South Mims an entirely new Road has been made, with two bridges and a regular footpath; proper recesses have been made for containing repair stones, clear of the roadway; the tollhouse and milestones are of the same plan as those in North Wales.—Length, 3 miles 352 yards.

St. Alban's Road.

A new Road has been made from the Red Lion Inn, in the town of St. Alban's, across the river Vere to Pond Yards, with considerable cuttings and embankings, and a bridge over the river.—Length, 2 miles.

Hockliffe Hills.

An extensive improvement has been made at Hockliffe Hills, consisting wholly of deep cuttings and embankings; the roadway is formed with rubble stone pavement bottoming, covered with broken pebbles.—Length, 1 mile 1,672 yards.

Sandhouse Hills.

This improvement consists wholly of cuttings and embankings; the roadway is constructed as the last mentioned.—Length, 1,320 yards.

Brickhill.

Brickhill.

There is a new piece of Road at Brickhill, chiefly cutting and embanking; the roadway same as last.—Length, 880 yards.

Fenny Stratford.

At this village, the hollow west of the bridge has been raised by lowering the hill in the street, the roadway has been widened, several houses have been removed, and others underbuilt; fence walls, railings and stairs have been constructed.—Length, 451 yards.

Old Stratford.

At Old Stratford village the Road has been raised, widened, and made with paved bottom, and coated with Mount Sorrel stone.—Length, 370 yards.

Gullet Hills.

This improvement consists of cuttings and embankings; the roadway is constructed with a paved bottom, the workable part covered with broken limestone.—Length, 1,540 yards.

Cuttle Mill.

In this valley there is an embankment 44 feet in height, a cutting 15 feet in depth, a new bridge, and a pavement roadway.—Length, 1,452 yards. There is an additional piece of repaired road:—Length, 400 yards.

Towcester.

Some banking and cutting, and a new pavement roadway.—Length, 247 yards.

Between Towcester and Foster's Booth.

Six hills cut down and hollows filled, and a new pavement roadway made over them.—Length, 1,178 yards.

Stowe Hills.

Over these hills there are several very considerable cuttings and embankings; the roadway is made with a rubble stone pavement, having a coating of broken Hartshill stone as road metal.—Length, 1 mile 1,120 yards.

Braunston Hill.

This improvement consists chiefly of cutting and embanking; the roadway is constructed as the last mentioned, with Hartshill stone.—Length, 1 mile 306 yards.

East of Coventry.

The new Road east of Coventry has considerable cuttings and embanking; the roadway is similar to Stowe Hills, with a paved bottom and Hartshill top metal; there is a considerable new bridge, with recesses for stone depôts.—Length, 1 mile 272 yards.

West of Coventry.

The new Road between the city of Coventry and the village of Allesly is the same in all respects as the last mentioned, as to roadway, bridges and depôts; but in addition, there are two new tollhouses and gates.—Length, 2 miles 240 yards.

Pickford Brook to Meriden.

At Meriden a new Road has been made by very considerable rock cutting and embanking; the roadway is paved with hard sandstones, and coated with hard Warwickshire pebbles properly broken. From Meriden Hill to Pickford Brook Hill the Road has been put into a proper form, and coated with six inches of broken pebbles. A new Road has been made down Pickford Brook Hill, with a paved bottoming, coated with broken pebbles. This Road from Meriden to Pickford Brook has scarcely needed any repairs during the last six years.—Length, 2 miles 88 yards.

Wednesbury.

Here a new Road has been made across collieries, &c. below the town, in order to avoid a steep hill, and save a considerable distance. The bottom of the roadway is paved and coated with broken stones.—Length, 1 mile 704 yards

Bilstone.

This new improvement saves passing along a very aukward street, and is only about half the distance; it is constructed in the same manner as the last mentioned.—Length, 1,150 yards.

Wolverhampton.

The Wolverhampton improvement has been carried partly over a level field, and partly through old houses in the town; the roadway bottom is made with large cinders, and coated with Rowley rag and Pouck Hill stone.—Length, 1,199 yards.

Summerhouse Hill.

The first contract proceeded from the public house downwards to near Bonigale public house; it is all cutting and embanking; the bottom of the roadway is paved, and the top covered with broken pebbles.—Length, 858 yards.

The second contract consisted in lowering the hill above the public house, and embanking the hollow east of the hill; the roadway made as the last.—Length, 1,584 yards.

Cosford Brook.

In this formerly steep and dangerous pass, there is very considerable cutting in rock, and embanking; a bridge has been widened and raised; the roadway made as at Summerhouse.—Length, 700 yards.

Town of Shiffnal.

This improvement is partly over fields on the west of the town, and partly through some houses adjoining the market place, and across a brook, where a new bridge has been built; the bottom of the roadway is paved, the top is of broken pebbles.—Length, 456 yards.

Knowles Bank.

Consists wholly of cutting and embanking, and making the roadway same as last.—Length, 957 yards.

Llewellyn.

Here a new Road, from the last mentioned improvement, has been made to Prior's Leigh, in the same way as that at Shiffnal.—Length, 1,689 yards.

Prior's Leigh.

At Prior's Leigh there is much cutting and embanking; the roadway has a paved bottom and a coating of broken whinstone; the whole is fenced by stone walls.—Length, 1,724 yards.

Ketley Works.

At Ketley Iron Works an improvement has been made, consisting of cuttings, and an embankment 23 feet in height, also an arched roadway under it; the roadway has a paved bottom, with a covering of broken stone; the fences are of cinders from the iron works.—Length, 816 yards.

Gobowen to Chirk Bridge.

From the village of Gobowen to Chirk Bridge there is an entirely new Road; the bottom is paved and covered with a coating of broken stone. There is one bridge over the canal.—Length, 2 miles 1,452 yards.

It is fit to observe, before I conclude this description of the Roads made in England, that the work has been chiefly confined to cutting and lowering hills, and forming long and high embankments, so that the greater part of the expense has been incurred in moving earth.

HARBOURS.

Holyhead Harbour.

The money granted for this Harbour, since it was put under the Holyhead Road Commissioners in 1823, has been expended in giving additional security to the great Pier, the Lighthouse and Roadway; in deepening the Harbour, and laying down moorings for above 50 sail

50 sail of vessels: this last work relieves the space allotted to the Post-office packets. A large anchor has also been laid down at the North Pier Head, for their security in stormy weather.

The Graving Dock, which was in hand in 1823, has been completed; proper gates have been put up, and also a Boulton & Watt's engine; a carpenter's shop, smithy and store-house have been built; also a gatehouse and a boundary wall, inclosing the dock yard. A Road has been made from the town of Holyhead, communicating with the dock, along the south side of the Harbour.

About two thirds of the south protecting pier have been built, and backed with rubble stone.

On the north side of the Harbour, at the root of the great pier, a lockhouse has been built; also a harbour master's office, with a turret clockhouse and clock, and a custom house.

Lamp posts and lamps, posts and chains, have been put up, and good footpaths have been formed along each side of a new made Road between the landing pier and the principal inn; and a coach house and workshop, for the use of the mail coaches, have been built adjoining the inn.

A considerable quantity of rubbish has been removed from the Harbour by the diving bell, and the landing place at the pier head has been rendered more commodious.

Howth Harbour.

The money granted for Howth Harbour, since 1823, has been applied as follows:—

In renewing the rail road between the Harbour and the quarries at Kilrock, providing a quantity of suitable stones, applying a part of them in strengthening the glacis at the back of the eastern pier and that side of the Harbour, and having a quantity in readiness in case of injury from storms.

The roadways upon and adjacent to the piers have been put into a perfect state, and the inner edges of the quays have, in part, been secured by posts and chains.

The entrance to the harbour and the packet births have been deepened by taking up 5,963 tons of rock by means of diving bells, and 19,967 tons of sand and mud by dredging machines; thereby affording 11 feet of water at low water of ordinary spring tides, where there was only eight feet before.

HOWTH ROAD.

Between Howth harbour and Dublin, a distance of eight miles, the Road (formerly very imperfect) has been wholly re-made, and rendered in all respects similar to the Holyhead Road; it is now in a perfect state, having a proper cross section, and being smooth and substantial. A considerable sea-wall has been built to protect the Road. It is now referred to as a model for other Roads in the vicinity of Dublin.

SWILLY ROCKS.

In the Menai Strait, immediately to the westward of the site of the new bridge, the navigation was rendered inconvenient by the strong currents acting upon a parcel of Rocks known by the name of the Swillys; and it was stated by nautical men, that unless these were so far removed as to lessen these currents, the difficulties and risk would be increased by the new bridge.

Considerable exertions were therefore made, whereby not only have the several Rocks complained of been sufficiently cut away, but a projecting point of land has been taken off; and, upon the whole, it is acknowledged that the navigation generally is much improved, and that no inconvenience is experienced from the erection of the bridge.

Thomas Telford.

The Committee having called for an Account of the several Contracts which have been entered into by the Commissioners, find that one hundred and fifty-one Contracts have been made for carrying into execution the several Works already described. They also find that all the Works contracted for have been executed for the stipulated sums, except in one instance, wherein an exceeding took place of £. 76. 15 *s.*

See Appendix, No. 2.

The Committee beg to refer to the Evidence of Mr. Telford for an explanation of the mode by which the Contracts have been managed, and to the evidence of Mr. Milne for an explanation of the manner in which payments have been made to the Contractors.

See Appendix, No. 3. An Account which is given in the Appendix contains the salaries and other charges paid under the direction of the Commissioners.

It appears that the total sum paid for Works amounts to £. 697,637. 10 *s.* 6 *d.*; and that the sum paid in fifteen years for Charges of Management amounts to £. 28,460. 4 *s.* 1 *d.* This charge is something under four and a quarter per cent. on the expenditure. The sum of £. 4,583. 4 *s.* 7 *d.* has been paid for Parliamentary Fees in passing Acts, and for Exchequer Fees; and £. 2,821. 8 *s.* 5 *d.* for Solicitors' bills for passing Acts of Parliament, and other general business.

See Appendix, No. 3. The Committee find that the Commissioners, immediately upon the Harbours of Holyhead and Howth being placed under their management in the year 1823, reduced the amount of the salaries to Officers £. 611. 7 *s.* 6 *d.* a year, and that they have subsequently dispensed with the services of two Assistant Engineers: the number now employed is one between London and North Wales, another in North Wales, who has the care of the Suspension Bridges and the Harbour of Holyhead, and superintends all the Road business of the Commissioners; and a third, who has the care of the Harbour at Howth, and of the Road from Howth to Dublin.

See Appendix, No 4. In the Appendix an Account is given of the additional Tolls levied for the repayment of Loans advanced for the improvement of the Road between London and North Wales; the amount of the Loans advanced by the Commissioners for the loan of Exchequer Bills on the credit of these Tolls is £. 44,000, and the amount of the repayments which have been made is £. 32,781.

Sir Henry Parnell and Mr. Telford have been examined on the present state of the Roads, Embankments, Bridges and Harbours; and the Committee have to represent that these Works are in a perfect condition, and likely to continue so, in consequence of the complete and durable manner in which they have been constructed.

No. 5. The Committee beg to refer to the Letters which they have inserted in the Appendix, of several Coach Proprietors and Coachmen, as showing the benefits derived from one of the last pieces of Road Work which have been executed by the Commissioners.

The Committee have to observe that although the expenditure on these Works in the course of the last fifteen years has been considerable, great advantages have been derived to the public from the improved state of the Road, and the more rapid and regular communication between England and Ireland; a large saving has been effected by several measures of public economy which have been adopted in consequence of the improvement in the communication between London and Dublin: such for instance as the abolition of the separate Revenue Boards, and the transferring of the chief management of all the Revenue Affairs of Ireland to London. An annual sum of £. 12,000 has also been saved, which was expended, before the Roads were improved, in maintaining an express establishment for carrying the Correspondence of Government between London and Dublin; and the Postage Revenue on letters passing between Dublin and England has considerably increased.

As

As all the Works have been executed by contract and competition, and as it appears that several of the Contractors have failed, the Committee consider this a proof that the prices at which the contracts were made could not have been beyond what were fair and sufficient.

The Committee on the whole feel themselves justified in saying, from their inquiries into the proceedings of the Commissioners, that the Works executed by them afford an example of Road-making on perfect principles, and with complete success; and in making this Report to the House, they cannot conclude without stating their high sense of the public and permanent benefit which has resulted from the unexampled exertions of Sir Henry Parnell in discharging his duties as a Commissioner of the Holyhead Road, and from the great skill displayed by Mr. Telford in overcoming the seemingly insuperable difficulty of erecting a Bridge over the Menai Strait, and also in every other work which he has executed.

WITNESSES.

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MINUTES OF EVIDENCE.

Lunæ, 17° *die Maij*, 1830.

SIR HENRY PARNELL, BARONET,

IN THE CHAIR.

Alexander Milne, Esq. called in; and Examined.

Alexander Milne, Esq.

17 May, 1830.

WHAT office do you hold under the Commissioners of the Holyhead Road?—The office of Secretary.

Have you prepared any accounts to be laid before the Committee?—I have: having seen by the votes the object for which the Committee was appointed, and being informed by one of the Commissioners that accounts similar to those lately presented to the House of Lords would probably be wanted, with some addition, I have prepared certain accounts which I now hold in my hand.

Be so good as to mention the heads of them?—The first is an account of all sums received and expended by the Commissioners for the improvement of the Road from London to Holyhead, from the appointment of the Commissioners in 1815 to the 5th of April last; second, an account of all salaries, travelling charges and allowances paid under the direction of the Commissioners, within the same period; third, an account of each contract for works performed under the direction of the Commissioners, showing the amount paid, and the persons to whom paid; fourth, an account of the additional tolls levied for the repayment of loans for the improvement of the Road between London and Shrewsbury.

Are these accounts similar to the accounts which have been lately ordered by the House of Lords?—They include all the accounts ordered by the House of Lords, with the addition of the contracts between Bangor and Holyhead, the contracts for the Howth Road, for Holyhead Harbour, and for the Chester Road.

What is the sum that has been received by the Commissioners?—The whole sum that has come into the hands of the Commissioners up to the 5th of April last, amounts to 759,710 *l.* 6 *s.* 11 *d.*

How much of that consists of grants of Parliament, not to be repaid?—The grants of Parliament not to be repaid, amount to 338,518 *l.* 14 *s.* 1 *d.*

How much of advances by Parliament and of loans from the Exchequer Bill Commissioners?—The loans from Parliament are 267,414 *l.* 6 *s.* 6 *d.*

And the Exchequer Bill Commissioners, how much?—£. 44,000; and advanced by the Treasury 82,700 *l.*, also to be repaid.

How much does that come to in all?—In all, 394,114 *l.* 6*s.* 6*d.*

How much of that sum has been repaid?—The whole sum repaid is 103,633 *l.* 2 *s.* 2 *d.*

From what funds have the repayments been made?—There has been paid into the Exchequer, from the additional duty of 1 *d.* a letter on all correspondence passing over the Menai and Conway Bridges, 67,290 *l.* 6 *s.* 7 *d.*; there has been repaid to the Exchequer Bill Loan Commissioners, out of the additional tolls raised, 32,781 *l.* 14 *s.* 5 *d.*; and there has been repaid to the Exchequer, in part of the sums advanced by the Treasury, 2,512 *l.* 7 *s.* 6 *d.*; there has also been paid into the Exchequer out of the bridge tolls 1,108 *l.* 12 *s.* 9 *d.*; and these four sums make the first-mentioned sum of 103,633 *l.* 2 *s.* 2 *d.*

These are all funds established, and which will continue to be received and paid in liquidation of that debt?—They will.

What is the amount of the sum that has been expended by the Commissioners on works?—The expenditure on works, including the payments for land and damages, has been 697,637 *l.* 10 *s.* 6 *d.*

What is the sum that has been paid for salaries, travelling allowances, and other similar charges under the head of management?—The whole payment for

Alexander Milne, Esq.

17 May, 1830.

salaries, including that of the engineers, resident engineers, secretary and clerk, is 28,460 *l.* 11 *s.* 1 *d.*

What rate per cent is that on the expenditure?—Not quite four and a quarter per cent.

In what manner is the business of making payments of demands on the Commissioners conducted?—When a contract has been entered into, the work is placed under the care of the resident engineer, who makes up a monthly account of the work done; that account being examined, and the work measured by him, the account, certified by the engineer, is sent to me, as secretary, and being examined by me, the contractor is then allowed to draw for the amount due to him, leaving ten per cent as a security until the work shall be completed.

In what year were the harbours of Holyhead and Howth placed under the care of the Commissioners?—In the year 1823.

What number of officers have been reduced since that period?—Since that period there has been reduced the treasurer at Holyhead, who had a salary of 300 *l.* a year; the engineer at Holyhead, 320 *l.* a year; the secretary at Howth, 150 *l.* a year; the harbour master at Howth, reduced from 300 *l.* to 150 *l.* a year; the assistant engineer at Howth, whose allowances amounted to about 180 *l.* a year, having no fixed salary; the messenger at Howth, 11 *l.* 7 *s.* 6 *d.*; making 1,111 *l.* 7 *s.* 6 *d.*: there has been added a clerk or assistant secretary, at 100 *l.* a year.

In what manner has the business of paying for land and damages been conducted?—The land and damages in Wales amounted to very little: the amount was ascertained by the employing of Mr. Jebb, a surveyor resident at Chirk, who, communicating with the resident engineer and with the parties, settled the damages; the parties were paid the sums due to them in the same way as the contractors.

On certificate?—Yes.

After your examination?—Yes.

In what manner have the damages been settled for in England?—The same course has been adopted in England: a Mr. Price was employed to settle damages in the neighbourhood of Wolverhampton and Shifnal, and a Mr. Whatley, a surveyor also, was employed for the like purpose in the neighbourhood of Coventry; at Saint Albans and Barnet, and nearer to London, Mr. Montagu, the city surveyor, and Mr. Driver, an experienced land surveyor in this part of the town, have settled the damages, and communicated with the parties on the subject.

Has it been necessary on any occasion to have a jury?—None, except for the purchase of Bangor Ferry.

In your opinion, what has been the character of the claims for damage along the line of Road?—As far as I have been able to form a judgment, they have been moderate; and I know that is the opinion of the surveyors who have been employed.

In consequence of the value of property near London, the amount paid has been considerable?—It has been much greater in proportion in the neighbourhood of London.

Particularly at Barnet and Saint Albans?—Particularly at Saint Albans.

From not having had recourse to the opinion of a jury for the settling of any claims, you have had little or no difference of opinion with persons whose property you had to take for the improvement of the Road?—There has been a good deal of discussion, but it has always ended by mutual accommodation.

Without the intervention of a jury?—Yes: in one or two cases a third referee, as between the Commissioners and the parties claiming, has been employed to settle the amount, but that has not happened in above one or two cases.

What communication have you ever had with the local trustees on the line of the Road, regarding superintendence and the alteration of the Road?—In the year 1820, I attended two of the Commissioners, Sir Henry Parnell and Sir Thomas Mostyn, down the line of Road, when communications were had with the trustees, or a deputation of the trustees, along the whole line of Road from London to Shrewsbury; the subject of the various alterations and improvements contemplated were fully discussed, and afterwards became the subjects of correspondence, and a great many of the improvements that have subsequently taken place have arisen out of the conferences on that occasion.

Have

Alexander Milne, Esq.

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Have those improvements been done under the direction of the Parliamentary Commissioners, or under the direction of the trustees of the different local funds in which districts these improvements lay?—Under the direction of the Parliamentary Commissioners, I think, in almost every case; there are one or two cases in which improvements have been conducted under the local trustees, but generally under the Parliamentary Commissioners.

Do you mean that the Parliamentary Commissioners executed the duties of the local trustees in carrying their own improvements into effect?—They did, so far as regarded those improvements; the local trustees having made the loans and placed the money under the direction of the Parliamentary Commissioners.

Then the funds for those improvements to which you now allude were borrowed or taken up on the credits of the local trustees, but employed and laid out through the management of the Parliamentary Commissioners?—Exactly so.

Do you conceive that those improvements and alterations were done at a cheaper rate by means of the Parliamentary Commissioners than they could have been done under the management of the local trustees?—I have hardly the means of knowing.

The arrangement was that the loans should be repaid by additional tolls, so as not to interfere with the established tolls belonging to the trusts?—The loans have been repaid in part by additional tolls, and the repayments are still in progress.

What became of the portions of the Road so made by the Parliamentary Commissioners?—After being completed, and retained in the hands of the Parliamentary Commissioners for a certain time, they were handed over to the local trustees to be by them kept in repair, as part of their general trust.

Have the Parliamentary Commissioners had any thing to say in regard to the management or interference with those parts of the Road not comprehended in the particular improvements?—In their annual reports to Parliament, they have given their opinions on the Roads that were not immediately under their own management, being authorized by the Act to examine the whole Road and to report the state of it.

All interference with the local trustees and the management of the roads under their direction is done by agreement and consultation with the trustees, and not under the authority of an Act of Parliament?—All by agreement and consultation.

The Parliamentary Commissioners have no power under the Act of Parliament to interfere in the management or direction of the local trustees, without their concurrence?—None whatever.

Can you tell the Committee in what manner the trustees have acted generally, and carried on their communications with the Parliamentary Commissioners, with respect to disposition to concur with them as to approving of what has been done by the Parliamentary Commissioners?—The Parliamentary Commissioners have been frequently applied to by the trustees to undertake improvements on their different trusts, and to take the management of them. Those applications have arisen frequently out of conferences between the trustees or a deputation of them, and some of the Parliamentary Commissioners.

There has been a good understanding and perfect cordiality between the trustees and the Parliamentary Commissioners?—Perfectly so.

And a general approbation on their part of the manner in which the works have been executed?—I believe entirely so.

Have accounts been furnished to the trustees of the expenditure of the money in each case?—In the case of every improvement, an account of the whole expense is made up and sent to the trustees as soon as the improvement is completed.

In case of any additional work being requisite, has it been the practice to consult the trustees before it has been undertaken?—It has.

Thomas Telford, Esq. called in; and Examined.

Thomas Telford, Esq.

HAVE the improvements that have been made on the Holyhead Road by the Parliamentary Commissioners been carried on under your direction as their civil engineer?—They have.

From the commencement?—From the year 1815 to the present time.

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Can you give the Committee a description of these works?—Considering that these works are very numerous and have been carried on through the course of 15 years, I thought it would be prudent, if the Committee would permit me, to give in a paper, a Statement that I have made out after perusing all the documents, which I could not possibly have done without. This paper contains a short account of every improvement that has been executed under my direction, and is as follows.—(*See supra*, Report, p. 4.)

Have the works been executed by contract?—I have drawn out a paper stating in what way the execution of the work has been performed.

THE works performed under the direction of the Holyhead Road Commissioners have always been executed by contract, accomplished in the following manner:

Surveys, &c. &c.

1st. When the district to be operated upon was determined, the principal engineer and his assistants made out surveys, plans and sections, with memorandums of the localities. From these documents, detailed working drawings, specifications and estimates were made.

Contracts.

2d. For the performance of the work contractors were selected in the following manner:—The plans, sections, specifications and working drawings were submitted to the public by advertisements, and the ground shown and explained to persons disposed to become contractors; and from offers sent in, the lowest, if accompanied by character, experience and security, were accepted.

3d. The before-mentioned documents were sometimes submitted to a few experienced persons, and from their offers a contractor was selected.

4th. In cases of difficulty and risk the principal engineer was authorized to select such experienced persons as he knew to be qualified for such undertakings.

5th. In all cases estimates previously made by the principal engineer, or approved of by him, were the rule by which the proposals were judged and determined.

6th. During the progress of each undertaking, the works performed were measured monthly by the resident engineer, and a certificate made out by him in the terms of the contract, and transmitted to the Commissioners' secretary for payment, the engineer department having no concern with money matters. At the completion of each contract, the last certificate was examined and signed by the principal engineer.

7th. In all cases 10 per cent was deducted from the amount of each certificate, and retained in the hands of the Commissioners as a security for the due fulfilment of the contract.

8th. Both in England and North Wales, some of the contractors, though diligent men, have failed previous to finishing their undertakings: this obviously took place from the unusually strict provisions in the specifications and working drawings, and the rigour with which these were required to be carried into effect; but in all cases the one tenth of the value retained was sufficient to complete the works.

9th. The sums paid for contracts have not exceeded the contract price, except in one case (this excess was only 76 *l.* 15 *s.* in a contract of 8,940 *l.*), as may be seen in the printed statements.

10th. A good deal of additional work has been done besides what was provided for in the original contract, and this has been done under other written agreements; such as additional drains, widening bridges, building tollhouses, gates, depôts, additional materials for repairs.

What assistants have you had under you in carrying on these works?—First, in England, or rather between London and Shrewsbury, being a distance of 153¼ miles, I have had only one assistant resident engineer for making the surveys and for laying out and superintending the numerous improvements which have been detailed: second, in North Wales, I have also had only one assistant resident engineer, but while the extensive tracts of new roads and the large bridges were in hand he was allowed three occasional inspectors; the separate inspection of Holyhead harbour has been abolished, and that duty is performed along with that of North Wales: third, at Howth harbour there is a resident engineer, who superintends the works, and also the Road from thence to Dublin, being a distance of eight miles. The salaries, travelling expenses, &c. of the above-mentioned officers are separately detailed in the accounts which have been given in: in regard to my own personal remuneration, I have been paid only for the time when actually employed, at the rate of five guineas per day, and 2 *s.* per mile for travelling expenses.

Is it not part of your duty to make an annual inspection of the mail coach Roads from London to Holyhead and to Liverpool?—It is.

Will you be good enough to state to the Committee what, in your opinion, has been the effect with regard to the use of such an inspection?—The annual reports which

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which have been made to Parliament by the Commissioners, and which have been very generally circulated, describing in detail the present state of each district of the Holyhead Road, and the progress and effects of the improvements as they were made, have proved most beneficial, not only as regards the superintending and district surveyors, but also the local trustees: the surveyors, from being aware that the state of their districts will be minutely described, take pains to improve them; indeed, they have in general shown themselves disposed to do so, as far as the trustees enabled them; and the trustees observing the beneficial results from the numerous improvements made, are generally disposed to second the Parliamentary Commissioners, and in sundry cases to urge further improvements. The short set of rules (accompanied by drawings of the working tools and cross sections) for road repairs, printed and circulated by order of the Commissioners, have been of the greatest use in making the local trustees and their surveyors distinctly acquainted with what should be done towards forming and maintaining a perfect road, and thereby introducing general uniformity; and this good effect has not been confined to the Holyhead Road *.

It appears from an account delivered in by the secretary to the Commissioners, that there is a sum of 10,839*l.* 10*s.* 4*d.* laid out in the improvement of the Highgate Archway Road?—So I perceive.

From what source was that money derived so laid out?—That was derived, I believe, from a loan.

It appearing from returns that 10,839 *l.* 10 *s.* 4*d.* has been expended on the improvement of the Road on the Highgate trust, will you explain to the Committee the works which have occasioned so large an expenditure of that money?—I have a memorandum of them here, in a separate paper.

When this Road was put under the Commissioners I made several experiments, in order to ascertain some effectual mode of rendering it substantial.

1. Below the Archway a coating of hard stones, eight inches in thickness, was laid on the surface, as it was then formed; but this completely failed, by mixing with the clay, so that four inches of stone was worn out in five months, and the Road as bad as ever.

2. I next proposed to pave a carriageway in the middle, to drive upwards upon, and make one with flint gravel, on each side of the pavement, to pass downwards upon, but to this the Road Trustees objected.

3. I then had recourse to a bottoming of concrete, formed of Parker's cement and gravel, which was accomplished as follows:—1. The bed of the roadway was effectually drained by means of numerous side and cross drains. 2. Upon this was laid a bed of concrete, six inches in thickness, and indented with small triangular furrows. 3. When this became dry, which it did in fifteen minutes, it was covered with a coating of Guernsey granite, also six inches in thickness. This succeeded effectually.

These operations were performed under three contracts:

1. The Road below the Archway.
2. Making one quarter of a mile with the concrete composition, as an experiment.
3. Completing the whole Road to its present state.

This being a difficult work, experienced contractors were selected; but they worked at prices previously fixed.

Can you state the amount of the price of the cement?—The superintendent is here, who will be able to state it.

The Road is now in a perfect state of repair?—Yes.

And has been so since its completion?—Ever since it was opened.

Will you describe to the Committee the present state of the road and bridge at Stony Stratford?—The road through the town is exceedingly rough and imperfect, and has been complained of every time the inspection has been made for several years: the bridge is in a ruinous condition and dangerous, being partly repaired by timber and the piers partly fallen down; nothing can be worse.

Have you examined the foundation?—I have looked at it, but I have not taken any means to examine it very particularly, but the stones are out and the masonry fallen down. The bridge may be considered in a ruinous state.

Should you recommend the bridge to be repaired and widened, or that a new bridge should be built?—A new bridge is most advisable.

Do you think that would be in the end the most economical plan the two counties could adopt?—I think on the whole that would be the most economical plan.

(* These Rules are sold by Taylor, Holborn.)

Mr. *John M'Neil*, called in; and Examined.

Mr. *John M'Neil.*

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ARE you the resident engineer under Mr. Telford, on the Road from London to Shrewsbury?—Yes.

You conducted the work at the Highgate Archway Road?—I did.

Will you explain to the Committee the expense of the cement composition which was laid on the foundation?—The expense of the cement delivered was 2*s.* a bushel; it was mixed with eight times as much of washed gravel and sand.

What distance of ground would a bushel so made extend?—Laying on the cement six yards wide and six inches in thickness came to 10*s.* a running yard; but in this case part of the gravel got in taking up the old road was used; if new gravel had been purchased it would have cost from 12*s.* to 15*s.*: that included the forming of the bed of the road, which was done with very great care; in many cases there was taken out the subsoil and clay, in some places chippings of tin and quantities of furze, to the depth of two or three feet in some instances, were taken out; it was then levelled every three feet in length, and between the edge of that prepared bottom and the hard part of the road that remained, there were four drains formed longitudinally, and there were secondary drains running from those to the side channel drains, and from those again to drains outside the footpaths covered with brick, and they all communicated with each other and discharged the water into proper outlets; on the prepared centre of six yards in width, after it had been properly levelled, every three feet with a spirit level, the cement was laid on, mixing it first in a box with water, gravel and sand, in certain proportions; every cask of cement was tried before it was allowed to be used, and when we found it set properly in about 15 minutes, we then used it.

Did it become hard in 15 minutes?—Yes, so that we could stand upon it; in about four minutes after being laid, a triangular piece of wood, sheeted with iron, was indented into it, so as to leave a track or channel at every four inches for the broken stone to lie and fasten in.

For an angle of the stone to bed in?—Yes; and this triangular indent had an inclination of full two inches from the centre to each side, so that when the water and rain came through the broken stone it ran off the cemented mass by the first longitudinal drains that were made.

The cement had that fall from the centre of the road?—Yes, three inches from the centre to each side; that was sufficient to allow the water that percolated through the broken stones to run off.

What time of year was this composition laid on the Road?—200 yards was done in winter; all the rest in July, August and September.

It has been on the Road through the last winter?—There has been part of it on since June 1828, nearly two years.

Have you examined it to see what effect the weather has had on it?—I examined it frequently during the frost, almost every six weeks, and I never came to town without examining it.

In what state have you found it?—Perfectly hard in every case.

Not injured by the frost nor the working of the carriages over it?—Not in the least; there was an injury of six feet square, but it originated from the side banks of the Road coming down and bulging it up.

By under pressure?—Yes; only six feet square was injured.

At what rate of expense can a square yard be laid six inches thick of this composition?—In the neighbourhood of London it could be laid for about 2*s.*; according to the locality, per yard, six inches thick.

Was it dearer at Highgate, at the Archway Road?—About 2*d.* dearer than it would have been in London.

How many yards wide was it laid?—Six yards wide: the gravel that was found in the Road was made use of for part of it; if it had been to be purchased, I have already said it would have cost 2*s.* to 2*s.* 6*d.*

What state was the Road in when it was given into your possession by the Company?—I think it was as bad a Road as I ever saw; a coachman could hardly sit on the box when driving along it.

Was it in consequence of the surface being so uneven?—The surface was uneven in some places; it was not in ruts, but in holes ten inches deep.

What was the surface composed of?—Principally clay, gravel and sand.

No

Mr. *John M'Neil*,

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No body of strong materials?—They could not last on it; they were worn out: an immense quantity had been put on; there were 1,200 cubic yards of gravel put on annually. Shortly before we took possession they put about 800 *l.* worth of granite on a small space; the directors said it was necessary to examine the quantity of granite in the Road, that we might deduct it from the contractor's price, as they had laid out 800*l.* in granite within a short period. I did examine it, and opened the Road in various places, particularly where they told me it was on, and I could hardly find a stone of it.

Were not some of the stones worn into a perfect round shape?—Almost every one I found as round as an egg.

What in your opinion was the occasion of these materials wearing out so rapidly?—From the rubbing against each other, and from the weakness of the surface and the elasticity of the Road; in all cases those round stones were at the very bottom.

Was the Road damp or wet?—Very wet.

Had those stones worked themselves down below the furze and tin you say you had to remove?—They were resting on it, and quite elastic; when you leaped on it, it was like leaping on straw.

You found it necessary to remove all that stratum of furze and straw?—At first I did; I was afraid I should break the cement if we did not; at last I found the cement was strong enough without it, and we did not go to that expense.

And you laid your cement on the furze that was originally put there?—The latter part of the work was done so, about 50 yards.

Was not in some parts this mixture of furze and tin and so forth actually lying in putrid water?—When I opened it ten inches, I found it full of coloured water; the water rose up in it.

At what expense was Guernsey granite laid on that Road?—£. 1. 7*s.* the cube yard.

Can you state to the Committee how many tons of gravel and stone have been laid on the Road since it has been put under the care of the Commissioners?—8,146 tons of gravel and 3,614 tons of granite.

Can you state the number of yards of drains that have been made?—There have been four longitudinal drains made the whole length of the Road, besides numerous cross drains, one at every thirty yards, and there have been intermediate small drains every ten yards under the cement; making in all 12,803 yards.

What is the reason of such an unusual quantity of drains?—From the nature of the ground: it was cut through a clay soil, high banks on each side, and all the surface water that came from the slopes and the Highgate hill came down and rested in that hollow.

You made use of the cement because you could get no stone to make a pavement?—That was one cause; in that situation it was both better and cheaper than any stone that could have been put into it.

Can you give the Committee any statement of the comparative expense of keeping the Road in repair, previous to the undertaking of the work by Mr. Telford, and since that?—Yes, I can; I understood it cost 900*l.* a year; it can now be kept in good repair for much less.

Have you an opportunity of explaining to the Committee the different degree in which the hard stone wears when laid on the surface of such a Road as that was, or laid upon a cement foundation?—Yes, I have; I have tried it repeatedly since the stone has been laid on.

How many inches did you find of the stone wear out which was first laid on the Road before the cement bottoming?—I found four inches gone in one place where it was not on the bottoming, and not half an inch where the bottoming was the same stone; quartz was used in each experiment.

And in the same period of time?—And the same period of time.

By actual experiment and trial?—By actual experiment and trial; it was the first that was made.

You made the experiment on purpose?—Mr. Telford desired me to make that experiment.

So you can state that without any risk of error and mistake?—Quite certain; because it was on that the last contract was founded of carrying the work into execution.

Have you any notion of the saving of horse labour in consequence of the improvement on the Road?—I have.

Mr. *John McNeil.*

17 May, 1830.

State it?—I have tried the draft of drawing a waggon over it, by the instrument I have invented, and which has been approved of, and ordered by the Commissioners to be used on the Holyhead Road for proving the comparative merit of each part of the Road, and I found that it took a power of 56 lbs. on the Archway Road, only 56; and I have no doubt whatever that if it had been tried in the first instance, before the improvement was made, that what is now 56 would be at least 156, or that 56 horses will now do as much as 156 could do before the Road was improved.

Before you were employed by the Parliament Commissioners, were you employed in making and repairing roads, on the system of putting the broken stone on the soil or on the surface of the old roads?—Yes, since 1816.

You have now an opportunity of judging of the comparative wear of materials, whether so made use of or put on a paved foundation; will you describe to the Committee what, in your opinion, is the general result?—I have attended to it very particularly, and I have no hesitation in saying that the annual saving from a paved bottom will be one third the expense in any case; either a stone or cement bottom is the same; it is merely the solidity that is required.

In your experience and the observations you have made, taking together the first expense of making a road in the ordinary way, by putting the broken stone on the soil, and taking a certain number of years subsequent expense, say ten years, and on the other hand, taking the first expense in making a road with a solid foundation either of stone or cement with the same sort of broken materials and surface, for the same period of time, which would you say would be the cheapest in the end?—There can be no doubt at all on that subject; the saving, I think, will be one third, and if you will include the labour of horse power that is gained it will be very considerably more than that.

In favour of which?—In favour of the paved bottom.

What would be the saving in the course of ten years in favour of the paved bottom?—The saving in ten years will depend on local circumstances, but in every case a paved bottom will be found the cheapest: in the first place, the breaking of the stone is saved, which when hard granite is used is considerable; in the second place, a softer, weaker, and generally a cheaper stone than can be used for the top material may be made use of for the pavement; thirdly, the surface stones are preserved from wear in an extraordinary manner, by resting on a solid firm foundation, instead of mixing with the wet subsoils, and forming a loose elastic road, which takes some years and wears out many materials before it becomes hard and solid.

What do you mean to express by a paved bottom?—Unbroken stone set on edge across the road, six or eight inches deep and three or four inches thick; set firmly side by side, and the interstices filled up with stone chips packed in with a small hammer.

This forms in point of fact a regular pavement, but not smooth on the surface, of about seven inches depth, as the road foundation?—Five inches at the side, and seven inches in the centre, if the pavement is 18 feet wide.

What kind of stone do you use for this pavement?—Sandstone, limestone and schistus, or such as can be had in the neighbourhood; any stone almost will answer that will bear weight and not decompose by the atmosphere.

Is it not in many instances cheaper than any other material you can use?—It is the cheapest in the first instance, because you have not to break the stone; and the subsequent repairs cost less.

What season of the year do you consider best for laying the materials on the road?—I consider the winter season best.

Do you not recommend laying them on at the times when the roads are moist or wet?—In some cases they are better done so, in others not; there cannot be a general rule for it; in the gravelly country it would not do.

Do you lay them on by single hand-carts or harrows?—Under the management of the Parliamentary Commissioners, principally by harrows.

Have you any particular reason for that?—For the cheapness, as the same men that are employed during the year on the work, who understand it, can employ their time that way when they are not otherwise wanted to clear off the sides and dress the channels.

Is

Mr. *John M'Neil.*

17 May, 1830.

Is it not also better in laying on the materials by the barrow that you avoid the pressure of a cart, with so much additional material on it, in cutting up the road? It is, certainly; it is a very great advantage.

The carts in which the materials are laid on are generally carts with narrow wheels, and consequently those narrow wheels, with a heavy weight of materials, will cut up the road and do more harm to it than they could do good in laying on materials?—They do a great deal of injury; but one particular convenience in putting them on by wheelbarrows or hand-carts is that the stones are previously provided in depôts in the proper season of the year, and the depôts are made to hold a certain quantity, by which means the contractors cannot charge for a greater quantity than is absolutely provided, because they are previously measured in the depôts.

Are the depôts on the Holyhead Road built of a certain regular size?—They are built to hold 25 yards cube.

So that when filled they are the exact measure of that quantity?—They are. The bottoms are paved or flagged; and when the men are shovelling the stones into carts they do not take up any dirt with them, as they do in the common method when the stones are laid in heaps on the side of the road.

At what distance are they placed from each other?—Four in a mile.

You are resident engineer on the road from London through England?—From London to Shrewsbury.

How many works had you under your charge last year, beginning at the Archway road?—I had the Archway road, South Mims road, the Sand-house and Forty Mills Hills new roads, Fenny Stratford new road, Old Stratford new road, the Gullett Hills between Stratford and Towcester, the two Coventry roads, on each side of the town of Coventry, the Wolverhampton new road, and the Shiffnal and Knowles Bank road, besides the surveys connected with the new proposed works, and the repairs of two or three other roads.

Do you assist in settling the damages to be paid?—I always assist in it; in one or two instances I have agreed for the damage.

The certificate for payment comes under your hands?—Yes: I measure the works every fourth week, and make out the monthly certificates; the certificate for the damages is made on the valuation of the land-surveyors.

Are the workmen employed on the road under your superintendence paid by day wages or by the piece?—Almost always by the piece; in a case, latterly, where the work was taken out of the hands of the contractor, where he had failed, we were obliged to do it by day work.

But the general practice is to do it by contract?—Always by contract.

Has not your attention been drawn to the state of the road on Stony Stratford and the bridge there?—Yes.

Do you know whether any progress has been made in repairing either the one or the other?—There has been nothing at all done.

The two counties of Buckingham and Northampton have acknowledged their liability to repair the bridge between them?—I believe they have; I understand it is so.

Do you think it is essentially necessary to putting that bridge in a sufficient state, do you think it necessary to widen the bridge?—I should be afraid to do any thing with the bridge, it is in so ruinous a state; I had the water out, and examined all the foundation.

What the Committee meant to ask was, whether by widening the bridge or having a new one, would it be necessary to have a wider bridge?—A wider bridge is desirable.

You do not think it practicable to widen the present bridge?—It may be done, but I should think it ought not.

There are two plans which have been suggested; the one is by putting a parapet out, and another by widening the foundation, building from the bed of the river and widening it in that way; which do you prefer?—I should think the building from the foundation would be the best, and the reason is that at present part of the Road is supported in the way you allude to, by running timbers from pier to pier.

You have carefully examined, under the direction of Mr. Telford, the actual state of the foundation of that bridge?—Very accurately.

Mr. *John M'Neil.*

17 May, 1830.

And you have been present with him on his inspection of them?—I have.

And it is his opinion the present state of the arches and piers is such as to make it ineffectual to attempt to repair the bridge?—I understood so from him.

With regard to the Road, have you had any communication with the trustees of the Road on the subject of the bad state of repair, and the bad state of the pavement in Stratford town?—Nothing more than complaining on my part of its bad state: they are doing now what is absolutely absurd; they are putting some dirty gravel on the top of the paving stones, which in winter will be washed out by the first shower and be as bad as ever.

Mr. *John Provis*, called in; and Examined.

Mr. *John Provis.*

ARE you the Assistant to Mr. Telford in North Wales?—I am.

Describe the works that were under your charge in the course of last year?—There was the foundation of the south pier of Holyhead harbour, and various other works connected with that harbour. I had charge of the Menai and Conway bridges; the letting of the tolls, the contracts for several tollhouses and gates on the line between Holyhead and Shrewsbury, and likewise pointing a great quantity of wall in Anglesey; also, on the Holyhead and Chester Road, making a new piece of Road at Pen Man Mawr.

Are all those works in a good state?—They are all in a perfect state.

What is the amount of the contract for building the south pier at Holyhead?—It is between 5,000 *l.* and 6,000 *l.*

Do the packets arrive and depart regularly twice a day without any inconvenience?—Regularly and without any obstruction.

Are there many trading vessels coming into Holyhead harbour?—A considerable number.

Has the accommodation of the trade been much improved by the money that has been expended in deepening the harbour and forming a quay at Parry's Island?—Very much so; by deepening the upper part of the harbour it has taken a great number of the coasting vessels from the packet births and relieved it.

That complaint no longer continues of the mouth of the harbour being choked up as formerly when packets had to enter from their voyages?—I have not heard a complaint of the kind since I have been there.

Did you conduct the improvements in the navigation of the Swilly Rocks?—I did.

What was the kind of improvement that was made there?—By lowering several rocks, part of which were visible at high water and part were not visible, and by cutting off a very considerable projecting point of land on the Carnarvonshire shore, composed of a kind of soft rock.

Are you able to state what effects have been the result in regard to the improvements of the navigation of that part of the straits?—In many instances it has allowed vessels to pass over the rocks in various states of the tide, which previously they could not pass over, and particularly when beating or tacking against the wind.

What is the opinion of pilots and others as to the safety of it?—The opinion of all the pilots I have conversed with on the subject is that it is a very material improvement to the navigation of the straits, without one exception.

Formerly it was very dangerous, was it not?—Very dangerous.

Has any accident happened since the improvement has been made?—I have not heard of one.

You have the care of the Menai Bridge?—I have.

For what period of time?—For more than three years.

Has any accident happened to it in that time?—None whatever.

Nor any expense been incurred in repairs?—None more than is necessary to keep the painting perfect and keep the roadway perfect by putting a coating of pitch and tar over the wood work to preserve it from the atmosphere as well as the wear and tear.

Have severe gales of wind any effect on it?—They have a trifling effect, they produce an undulatory motion.

No gale has been followed by any breakage?—None since I have had the charge of it.

Have the masts of vessels touched the bridge in going under?—There was an instance

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instance of one brig merely having touched the top-gallant-mast; there was some portion of wood on the summit of the mast, which is used for hoisting the flag, was knocked off.

Has the bridge at the Conway stood equally well?—It has stood equally well.

Has any accident happened to the sea embankments at Conway or at the Stanley Sands?—None.

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Sir *Henry Parnell*, Bart. M. P., a Member of the Committee; Examined.

Sir *Henry Parnell*, Bart. M. P.

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YOU are a Commissioner of the Holyhead Roads?—Yes.

Will you have the goodness to describe to the Committee in what state the Roads and the works upon those Roads now are or were when you last inspected them?—I accompanied Mr. Telford upon his annual inspection during the last Easter recess, and examined the whole of the works with him, excepting the harbour at Howth; I did not go over to Howth; and I am able to say that I found them all in a perfect state.

Did you find the embankments that have been made at Stanley Sands and at Conway in a good state of repair, and sufficiently strong to withstand the effects of the sea and storms?—These embankments I had an opportunity of seeing at low water, and they were in a perfect state; and I believe that no accident has happened to them since they were first completed, which is now four or five years ago; they were made particularly strong, and every thing was done to provide against the effects of the sea breaking upon them.

And you found all the works upon the whole line of Road in that state that you can give it as your opinion to the Committee, that they have answered the expectations of the Commissioners?—Yes, I can say so, and that they are in that state that shows they were built and constructed upon the very best possible principles; and that the chief engineer, and his assistant engineers, who have had the management of them, have discharged their duty in a most satisfactory manner.

Can you state to the Committee the advantages that the public have derived from the communication that has been made by means of this Road between this country and Ireland, with regard to the saving of time?—In the year 1815 the London mail coach arrived at Holyhead at two o'clock in the evening, it now arrives at Holyhead at a quarter past one in the morning, and performs the journey so easily that a new regulation is necessary in order to provide that it should arrive at least an hour earlier. This occurs from having established a Road free from every sort of difficulty the whole way from London, it being of a regular breadth, of a regular form, and perfectly smooth throughout; the advantage of easy and rapid travelling is thereby secured; and from the principal efforts in making the improvements in England having been confined to reducing hills, there is now no very inconvenient hill on the whole of the English part of the Road. In Wales the Road is as perfect in every respect as a Road probably can be which passes through a mountainous country. In point of the expense incurred on the improvement of the communication, I feel quite certain that the whole of it has been much more than repaid by measures which have been adopted for carrying on in London the administration of public business in Ireland. The abolition of the revenue boards in Ireland, which have been attended with a very large annual saving of public expense, I can undertake to say was a measure that was very much owing to the facility with which the communication can be now carried on.

Has not the communication between this country and Ireland been very much expedited since the improvements that have been made upon this Road?—The mail alone arrives thirteen hours earlier at Holyhead than formerly, and travelling of every description has been very much expedited. For instance, a day coach has been established some years, which performs the journey from London to Shrewsbury, a distance of 154 miles, in one day; and recently, on the 1st of May, when a trial was made of what could be done upon the Road by the Birmingham coaches, one of them performed the journey of 110 miles in seven hours and three quarters, and two others, I understand, performed it under eight hours; and I believe that they did this without incurring much risk, in consequence of the improved state of the Road.

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Will you state to the Committee the advantages arising to the public from the erection of the bridge over the Menai Straits?—The advantage consists in the difference of driving in your carriage at the same rate over the Menai Bridge as you do along a good road, instead of being under the necessity of having your carriage put aboard a boat to be ferried across, and getting yourself into another boat, to pass a strait, subject to great difficulty, particularly in bad weather, in making the passage.

Can you at all state to the Committee the quantum of time that is saved in crossing?—I think the average time that the mail took to cross was from 20 minutes to half an hour in the middle of the night.

And now it passes in what time?—It trots over the bridge in about one minute.

Previous to the alteration and improvements being made on this Road, by what means was the Government communication kept up between this country and Ireland?—Partly, at times, by express: Government had a contract for some years with Mr. Willan, for a horse express between London and Holyhead, which cost about 12,000 *l.* a year; that horse express performed the journey in about 27 hours, whereas the mail coach now performs the journey in 29 hours, and ought to perform it in 28 hours.

Do not you think that the journey to Holyhead might be performed in a less time by a mail coach than it is at present?—If the mail coach travelled at the same rate as I understand the Liverpool mail coach travels, it would perform the journey in nearly an hour less time. The Devonport mail travels still faster than the Liverpool mail.

Do you know in how much shorter time the Liverpool mail performs a mile than the Holyhead?—I understand the Liverpool mail performs a mile in six minutes and a half, and the Holyhead mail in six minutes and three quarters.

Will you state to the Committee your opinion as to the prices which were given for the contract work on the roads in England?—In all the improvements that have been made in England, I made it my business to examine the particulars of the estimates for each work; and the prices upon which those estimates have been formed, I can take upon myself to say, have been the customary prices of the country, and have been as low as they ought to be to secure proper work, and to pay the contractors a fair remuneration.

Can you state your opinion as to the prices that were given for the contract work on the Roads in Wales?—I did not attend so minutely to each particular contract, but I know that the prices upon which the estimates were formed by the assistant engineer were prices of the same kind; and I believe, from having taken considerable pains to ascertain whether we got the work done on proper terms, that all the work done has been done on as favourable terms for the public as possible.

Can you state to the Committee any instance in which the contractors have failed, and the cause of their failure?—In Wales there was a contractor of the name of Jones failed, and as I have always understood in consequence of a contract he undertook for the Commissioners; there was a contractor of the name of Roberts in Wales also failed, and as I understood for the same reason; and another contractor in Wales of the name of Evans; and in England the contractor who executed the greater part of the works, and executed them exceedingly well, and against whom there could be no kind of complaint made, has also failed: at the same time I am able to state that the Commissioners suffered no loss, because, in consequence of acting on the principle of not making any payments except upon a monthly certificate of work measured and finished according to the contract, and of withholding 10 per cent, in every instance there has always been money enough to complete the work for the sum originally contracted for, except in one case, which was that of the road from Barnet to Mims; where, upon a contract exceeding 8,000 *l.*, in consequence of its being necessary to take the work out of the hands of the first contractor and to make a second contract, there was an excess of 76 *l.* 15 *s.*

Then you suppose that the failures of these contractors are to be attributable to their having undertaken the works at prices which would not allow them a sufficient profit?—It is not easy to say exactly that; but it may be inferred from this circumstance that they have not been paid anything like too high prices for their work.

Well,

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Well, in those cases in which the contractors have failed, you have already stated that there was a sufficiency of funds left in the hands of the Commissioners to complete the work contracted for at the estimated expense?—Yes, that is the fact. I am able to say, from an account I hold in my hand, that when it became necessary about a year ago to take seven contracts out of the hands of the contractor, Mr. Baylis, amounting to 17,808 *l.* 13 *s.* 3 *d.*, the Commissioners had at the time in their hands 1,235 *l.* 16 *s.* 9 *d.* applicable to these works; and that they have completed the whole of them according to the specifications in the contracts, and have a balance to pay Mr. Baylis of 29 *l.* 5 *s.* 9 *d.*

Thomas Telford, Esq. again called in; and Examined.

Thomas Telford, Esq.

WILL you state to the Committee what was the expense of the milestones put up upon the Holyhead Road?—They were executed under a contract at 2 *l.* a piece, delivered at the Menai bridge, to which was to be added just merely the expense of carriage to wherever they were put up, and the iron plates.

Where were the milestones got?—They were got in the north end of the island of Anglesey, where the stone for the Menai bridge was got.

Is it a granite?—No; a very fine and hard limestone.

Was there any quarry nearer hand than that, where you could get stones?—None, none so fit for the purpose; we should have been very glad if there was.

Was it a cheaper plan putting up milestones made of stone, than it would have been putting them up of iron?—Certainly, much cheaper, to make them of a proper size.

What was the average price of placing each milestone?—Just whatever distance it was carried; it was just the price of carriage to that spot added to the contract price.

By what means was that rate calculated?—It was paid for at the rates of 10½ *d.* and 12 *d.* for each stone a mile, and they are about 23 cwt. each.

Between Holyhead and Shrewsbury was there any stone to be found fit, in your opinion, to make milestones?—Not any so good; we might have found sandstone, but that is not so fit for milestones.

For what reason do you say that this Anglesey stone was so much superior?—Because it is a species of marble, particularly hard and fitted for milestones, which are so much exposed.

Was the colour an object?—The colour happened to be quite proper, but that certainly was not the main object.

From the experience you have had in travelling about England, what is your opinion generally about the sort of milestones on the roads?—I never saw a proper milestone that I could copy; I looked for three years all over England trying to find out one as a pattern, and after all I could not find out one that looked like a decent milestone.

What sort of milestones are there generally on the Holyhead Road?—They are most of them not legible.

Are they not perfectly useless for the purpose?—If they are not legible they are useless, certainly.

Is there any convenience in having regular good milestones for carrying on the repairs of the road, and measuring the work?—Certainly, it is absolutely necessary; there are some marks, but none so good as milestones.

What is the height of these milestones above the surface of the ground?—Four feet six inches.

What is the size of the stone above the surface of the ground?—Two feet by 12 inches.

You say those milestones were landed at the Menai bridge?—Yes.

What was the greatest distance any milestone was drawn from the Menai bridge?—The farthest they were carried by land was 80 miles.

Have not some of the milestones been conveyed by water to Saint Albans?—They were carried by sea to London, and carted from thence to Saint Albans.

At what rate was the carriage paid upon those?—Indeed I do not know; they were carried at the same rate as any other weighty article, from 10 *s.* to 15 *s.* a ton from Wales to London.

Is there any ornamental work about the milestones, or are they quite plain?—Quite plain.

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Will you state to the Committee how many toll houses there are on the line of Road in North Wales?—There have fifteen been built under the Commission.

Can you state to the Committee the kind of building, and the general average expenses of building them, on the Welsh Road?—They are much the same on all the Roads.

What number of rooms do they consist of?—They consist generally of four rooms. The low ones have four below; the higher ones having a sleeping place over, have three below.

STATEMENT of CONTRACTS for Tollhouses, Gates, &c. on the Holyhead Road in North Wales.

The Contracts have been made on tenders given in by builders who have had the plans sent to them.

The Tollhouses have uniformly four apartments, from 10 to 12 feet in the clear, viz.:

1. One occupied by the toll collector.
2. One as kitchen and sitting room for the family.
3. & 4. Two small bed-rooms.

DATE.	Contractor's Name.	WHERE BUILT, &c.	COST.		
			£.	s.	d.
1821: 22 Sept.	William Parry	- - at Llanfair; a tollhouse, garden-wall, privy, wrought iron tollgates, on two roads, hung complete	328	–	–
	George Deas	- - at Ty-issa; tollhouse, weighing-house and pit, garden wall, privy, tollgates and turnstiles, hung complete, on two roads, and breast wall	400	–	–
1822: 25 March	Robert Pritchard	- - at Stanley Sands Embankment, tollhouse, garden walls, privy, wrought iron gates, on two roads, &c.	346	–	–
	Ditto	- - at Gwalchmai; ditto, with two wrought iron gates, on two roads	346	–	–
	William Parry	- - at Nant; ditto, with two sets of wrought iron gates	328	–	–
1824: 17 June	Thomas Evans	- - where the Wrexham Road goes off at Chirk Gardens, a tollhouse, garden walls, privy, and three sets of wrought iron gates	297	–	–
1826: 9 August	Ditto	- - at the Town of Corwen; ditto, one set of iron gates	244	–	–
—	Ditto	- - at the Town of Llangollen; ditto - ditto	239	–	–
31 August	George Deas	- - at Pen-r-mynydd; - ditto - ditto	260	–	–
—	Ditto	- - at Tre-Evan; ditto, with two sets of wrought iron gates, with turnstiles	345	–	–
1827: 2 August	Messrs. Gill & Hodges	- - Conway Marsh; tollhouse, &c. with three sets of gates and one turnstile	262	–	–
1829: 22 July	George Deas	- - Tyn-y-lon; ditto, one gate	272	11	3
– – - -	Ditto	- - ditto - ditto - ditto	248	11	3
16 Sept.	Ditto	Bettws-y-Coed, ditto, with breast wall and gates opposite, in the Llanrwst Road	270	11	3
1829: 31 July	Messrs. Gill & Hodges	- - at Pen Maen Mawr; tollhouse, garden-wall, privy, wrought iron gates, &c. hung complete	242	–	–

Have these tollhouses been built by competition, by contracts and competition?—They were uniformly built under contracts.

Have you any doubt that they were built upon as reasonable terms as the sort of building made it absolutely unavoidable?—I have no doubt at all that they are worth every shilling that was laid out upon them.

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In your experience with respect to roads do you find that the providing of a comfortable house contributes to the well letting of the tolls?—There can be no doubt of it, and that was one of my principal motives for recommending comfortable houses; by making the people comfortable you get respectable persons to take the tolls.

Have you had any experience in Scotland which enables you to form that opinion?—A great deal; I had done several hundred miles of road in Scotland before I began in North Wales.

And from your experience of the effect of building good tollhouses on letting the tolls, you were induced to recommend the same plan in Wales?—I would not hesitate a moment to recommend it anywhere.

Is there a garden attached to each tollhouse?—There generally is a very small one.

When did you last make your inspection upon this line of Road?—It was about a month ago.

In what state did you find the Roads, generally speaking?—Is the Committee speaking of North Wales or England.

Both?—Beginning with North Wales, from Holyhead to Chirk I did not find a single defect; some of the stone walls wanted pointing, but otherwise the Road was perfect.

In what state was the Road from Chirk to Shrewsbury?—Some of it very indifferent.

Has this Road been under the direction and superintendence of the Commissioners of the Holyhead Road?—I have nothing to do with the repairs of it, it is not under this Commission.

Is not that Road an old Road that has not been at all reformed by widening and by other means?—There has only been about a mile or a mile and a half near to Shrewsbury reformed; all the rest remains in its old state.

Is not the defect you allude to principally the narrowness and crookedness of it?—Several other things besides; they are crooked, narrow, hilly and weak.

Are you acquainted with the funds that are applicable to maintaining them?—No.

Do you imagine that a sum of 50*l.* a year per mile applied to that Road would be sufficient to put it into a good state?—I think it is not adequate.

Then if no more money has been applied it is not a matter of wonder that it is not in a very good state, is it?—It is no wonder.

Will you inform the Committee what the state of the Road is from Shrewsbury to Coventry?—From Shrewsbury, 12 miles is partly reformed; some of it is still bad, crooked and hilly. For seven miles it is imperfect, the next five miles are tolerably well; from thence to Birmingham in most places the Road is in a tolerably good state; all the difficult parts have been reformed by the Parliamentary Commissioners, except that between Wednesbury and Birmingham; the Road is not in their hands, and it is very weak, and in fact almost broken up after the frost; it ought to be better, as the materials are excellent. From Birmingham to Coventry the Road is in a pretty good state, but still a good deal of additional improvement is required, but the improvement already made has been very considerable since the Parliamentary Commissioners have inspected it annually, and reported: but by circulating the Road printed rules, and by frequent communications with the surveyors and trustees, there has certainly been a great deal done in the course of the last seven years. From Coventry to Stony Stratford, excepting some hills that still ought to be reduced and hollows filled up, and a great many trees cut away from the side of the Road, it has otherwise been improved by the Commissioners between Coventry and Stony Stratford. At Stony Stratford the state of the town and the bridge are both exceedingly imperfect; the street is a rough pavement, generally covered with soft dirty gravel that soon works into mud. I do not know who the bridge belongs to, I believe it is in two counties, but it is a mere ruin, it is dangerous and a disgrace to the place; it is partly repaired by timber, the masonry of the abutments is partly come out, and in short it is in a very dangerous state and ought to be indicted: I have repeated this observation now for seven years.

From Stony Stratford to London, in what state is the Road?—From Stony Stratford to London the Road is generally in a pretty good state: but in all those parts where it is repaired by flint gravel, or indeed gravel of any kind, whatever pains and expense are bestowed upon it, it is of very little use, as in

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a very short time it costs as much in scraping it off the Road as it does putting it on; nothing but broken stone will answer in the middle part, where the traffic is so great.

Then on the whole is the state of the Road from Holyhead to London in good travelling condition?—I think, with a few exceptions, nothing can be better.

Will you state to the Committee in what condition you found the embankments on the Stanley Sands and at Conway?—In a very perfect state; both with regard to the roadway over them, and the slopes that are exposed to the sea.

Did it appear that the sea during the late winter had in any way damaged any part of the slopes?—Not in the least.

Or since they were first finished?—They have not been injured.

In what state did you find the bridges?—The great bridges?

Yes?—Quite perfect.

Have they in any way shrunk, or given way in any respect whatever?—They have not.

In what state did you find the harbour at Howth and the harbour of Holyhead?—They are both in a very perfect state.

Is the convenience now so complete that the packets arrive, and pass and repass, without any difficulty or detention on either side?—Quite so.

Have they sufficient water at all hours?—They have, on both sides: they have 11 feet of water on the Howth side at low water in ordinary spring tides; on the Holyhead side they come into deeper water, at the pier head.

Has that depth of water been increased by the measures that have been pursued?—Very much; it has been increased at Howth about three feet since it has come into the hands of the Commissioners; that is, from eight to eleven feet.

Has that depth of water been increased owing to the erection of quays?—No, by artificial means; the rock part was reduced by diving bells, and the mud and sand by dredging machines.

Are you obliged to keep those dredging machines in constant operation for the purpose of keeping the same depth of water?—I do not think it will be necessary when once it is fully acquired; they are hitherto kept in constant operation on the Howth side, for the purpose of giving more berthage room for the packets.

Is there any likelihood of its filling up?—I see none.

Then it is your opinion that if the harbour is once completely cleared, that there will be always the same depth of water as you now contemplate, without the expense of keeping the dredging machines always regularly at work?—I think so, except perhaps after great storms. On the Holyhead side there was always sufficient water at low water in spring tides at the pier head; but after that harbour was constructed and good landing made, there was a great concourse of vessels came into it. I have seen 100 coasting vessels come in in a storm, and they crowded about the pier head so that the packets could not get to or from it, and therefore the dredging machines have been made use of to make deeper water in the inner harbour, and so relieve the packet berths.

In what state is the graving dock?—Very perfect.

What size is it?—300 feet in length and 90 feet in breadth and 20 feet in depth.

Is it much used?—Very much; it is chiefly for packets, but when vessels get damaged at sea they come in there, and pay for going into the dock.

Are there many instances of the harbour being used by vessels driven there in distress?—A great many; sometimes there are 100 vessels there at a time.

Have vessels of large value been saved by being brought in there?—No doubt.

Can you state any case?—By the harbour master's statement, between the years 1820 and 1828 vessels to the extent of 774,664 tonnage have taken shelter in the harbour; and in the course of the last five years 42 vessels have been saved by being hove in by capstan and warps.

Your answers as to deepening the harbour were applicable both to Howth and Holyhead, were they not?—Yes; not so much at Holyhead as at Howth; one relates to the entrance, and the other the interior.

Then the Committee are to understand that at present there is sufficient water for entering the harbour at Howth, and for the packets to lie at their births?—I have no doubt but that there is.

But the object is to extend the space of deeper water, so that they may have more room to turn in and out, is it not?—It is to afford more room within the pier head.

What

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What state is the road from Howth to Dublin in?—Quite perfect. So perfect that I understand it is quoted as a model for all the roads in the vicinity of Dublin; that they are to be made on the same principle as the Holyhead Road.

In forming that Road did not you find it necessary to construct a sea wall to protect it from the sea?—I did, for about three quarters of a mile at least.

Has that wall remained unhurt by the sea?—It has.

Previously to the erection of that wall, will you state to the Committee what was the state of the Road over that particular part?—The Road was frequently washed away in that part; when the wind came in the direction of the south east it cut nearly through it.

And that is now completely obviated?—Completely.

Were there any other means by which a communication could have been made as safe as the present one?—Only by removing the Road to a very considerable distance from the sea, and then there would have been an embankment to raise across the hollow, and that would have cut up the fields and created a still greater expense than has been incurred.

Does the sea pass the Road at all or come within the Road?—Not since the wall was built and the Road finished.

Will you state to the Committee how you were paid for the surveys and drawings and general superintendence of the plans for this Road?—I was paid at a rate per day, according to the time that it required to superintend the making of the plans; as to making the surveys and plans, I had no advantage from them whatever.

At what rate per day was that charge made?—Five guineas a day.

Was there any allowance for travelling expenses?—Two shillings a mile.

And you were only paid for the number of days on which your personal attendance was given either to the superintendence of the plans and works or to your attendance on the Commissioners?—Nothing else whatever.

Will you state to the Committee what is the amount of the remuneration that you have received for superintending these works, in which you were occupied for 15 years?—The whole is 6,295 *l.* 5 *s.* for 15 years.

The Menai bridge included?—The Menai and Conway bridges, embankments, harbours, and every work connected with the road improvements between Holyhead and Dublin.

If your services had been paid for, and your superintendence of the Menai bridge and the Conway bridge, in the usual way that engineers and architects are paid, would the remuneration for those two works alone be equal to what you have received for your general superintendence of the whole?—It would have been double; they are generally allowed five per cent, and five per cent on these bridges would give me about 11,831 *l.*

Have not a considerable part of the surveys been made by order of the Treasury?—Yes.

Do your assistants in Wales and in England make surveys?—They do: there is nothing paid for that extra; for all the surveys that have been made by my assistants for works carrying on and laying down, they have not been paid any thing more than their salary.

Is that salary defrayed by the Treasury, who order the works to be done, or by yourself?—Excepting the separate surveys ordered by the Treasury, they were paid by the Commissioners; they in fact are paid for by the Commissioners.

Then are the Committee to understand that the expense of your assistants is included in their salaries?—Yes, in their salaries.